the mother observed that when the vertex was touched, the child being then sitting up, it would lose control of its head and fall over. If the face was touched, or even the hair, ever so slightly, the child would fall back, but without loss of consciousness. When seen by D'Alloco, the examinations covering a period of twenty days, the results of previous falls upon the head were evident. There was no doubt that an epileptogenous zone, involving the head and face, was present in the child. Upon this zone a tap with the finger, a slight pressure, or merely stroking the hair, caused a general instantaneous muscular shock, with relaxation of the limbs producing a fall. The author regards this case as a combination of reflex epilepsy with myoclonus. The boy's sister, aged 15, was slightly myoclonic. She was free from evidences of degeneration.

Under the head of general remarks, the author cites the opinion of Seppelli, Unverricht, and Bresler, as authorities on the association of myoclonus and epilepsy. CLARK.

ANATOMY.

116 THE TOTAL NUMBER OF FUNCTIONAL CELLS IN THE CEREBRAL CORTEX OF MAN, AND THE PERCENTAGE OF THE TOTAL VOLUME OF THE CORTEX, COMPOSED OF NERVE CELL BODIES, CALCULATED FROM KARL HAMMARBERG'S DATA; TOGETHER WITH A COMPARISON OF THE NUMBER OF GIANT CELLS WITH THE NUMBER OF PYRAMIDAL FIBERS. Helen Bradford Thompson (Journal of Comparative Neurology, Vol. IX, No. 2, 1899, pp. 113-140).

The estimation of the number of the nerve cells in human cortex cerebri is a problem as scientifically important as it is difficult. In this report appears what is undoubtedly the closest approximation to the fact yet published, and the chief product or result does not a little to further the doctrine of parallelism between consciousness and bodily structure in that *it increases eightfold the largest estimation previously made* regarding the number of these cells. This probable increase careful psychological analysis of the mental side long ago made more than likely, some sort of psychophysical parallelism being always (at least since Spinoza) more than probable.

Miss Thompson's method was simply to perfect the process employed by Hammarberg, Meynert, Wagner, and Donaldson, correcting by recent data their errors of judgment and supplying what they had obviously omitted. Prof. L. F. Barker also must be given the credit for supposing the largest previous estimation too small.

Hammarberg had divided the cortex for convenience of the enumeration into sixteen regions, and made six layers of cells, namely, nerve fibers with a few small scattered cells, small pyramidal cells, large pyramidal cells, small irregularly shaped cells, ganglion cells, and spindle-shaped cells. He employed as the unit-cube of measurement a bit of the cortex 0.1 mm. square, the number of cells in each of these in any particular region being taken as constant.

"If Hammarberg's records were complete in every detail, they should, then, contain the following data upon each of the sixteen regions into which the cortex is divided; first, the thickness of each of the six layers; second, the two diameters in micra for the average cells of each layer; and third, the number of cells in each layer contained in a cube measuring 0.1 mm. on a side. But not all of these data are given for every region. Sometimes the thickness of a layer is omitted; sometimes the size is merely indicated by saying that they are larger or smaller than those of a corresponding layer in some adjacent region; and in some cases the frequency is not given. All these omissions have been supplied as accurately as possible."

The average number of cells in a column one centimeter square through the cortex was found for various places in each region, and this number varied between 29,880 in the sunken part of the temporal lobe and 76,615 in the exposed part of the occipital lobe. Donaldson's estimation of 2,352 sq. cm. as the total area of the cortex was employed, apportioned as follows: Frontal lobe, 41 per cent.; parietal, 21 per cent.; temporal, 27 per cent.; occipital, 10 per cent., and the island 1 per cent.

Without going into the elaborate and mathematically correct details or reporting any of the numerous tables of statistical results, we may here state Miss Thompson's estimate of the functional cortical nerve-cells in man as about *9,200 millions* (about 0.23 per cent. of the number of cells by Francke's estimation in the whole human body).

The second part of the present research considers, as its product, that only 1.37 per cent. of the total volume of the cortex is made up of functional nerve-cell bodies.

The third and last portion of the paper makes an estimation of the cortical giant cells, and presents the number as about 159,690, while the pyramidal fibers for the limbs and trunks combined are about 158,222. As the difference (only about 1,500) is not large enough a number for the pyramidal fibers supplying the head and neck, it is concluded by the researches that these latter fibers take rise in other cells located in the cortex, probably in the large pyramidal cells in the fifth layer of the lower part of the motor region. G. V. N. DEARBORN.

PATHOLOGY.

117 LES ARTHROPATHIES TABÉTIQUES ET LA RADIOGRAPHIE (The Tabetic Arthropathies and Radiography). Gibert (Nouvelle Iconographie de la Salpêtrière, 13, 1900, p. 145).

A paper having for its purpose, by means of radiographs, the explanation of cerain anatomical details of tabetic arthropathies. The observations were made upon four cases: 1. An osteo-arthropathy of the right thigh and exostosis of the right femur. 2. Osteo-arthropathy of the right knee. 3. Arthropathy of the femur, with involvement of the hip joint. 4. Osteo-arthropathy of the left knee. The radiographs are included in the article. The following facts are noted as the result of these observations: The chief anatomical fact to be considered is the disappearance or the deformation of the contiguous articular surfaces, together with an hyperplasia of the adjoining osseous parts. The deformation is caused sometimes by the flattening of the normally rounded head; at other times by the disappearance of the articular cavity; sometimes the articulation disappears in the midst of the new formation; at other times the articular ends preserve their morphological integrity and the new bone formation is formed round about the articulations. Osteophytes may be produced far from the joint involved, often upon the neighboring bone. Lastly, there is another mode of formation which has not yet been described. It is not by a progressive and continuous increase of the epiphyses, but by the formation of osteophytes in the periarticular surfaces. We are further justified in believing that a trophic form of tabes exists, and that there is in the cord a trophic center. The exact location of this is at present unknown. The excitation of this center has as the result an osseous hyperplasia, whereas a cause acting in an inverse